Breakout for Priority Action Plan 10 Standard Energy Usage Information

Session Chair: David Wollman

Leader: Marty Burns

Moderator: Toby Considine

Logistics

- **Webinar/phone information**
  - https://www2.gotomeeting.com/register/989695250
  - Phone: 877-869-4197 Pin: 2231470
- **Session Information**
  - http://www.grid-interop.com/2009/#session_1128

Agenda

- Call to Order
- Project Status
- Detailed Status Updates
- Discussion

Project Status and Detailed Status

- From the PAP10 page
  - http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP10EnergyUsagetoEMS
- Updated after September 29-30 coordination meeting

PAP 10: Objective 1 Tasks

Task	Responsible	Date	Notes
OBJECTIVE 1: Develop a summary of information needs for various means of customer information access about metering and billing. Develop requirements as quickly as possible, then reach out to SDOs to vet them and look for harmonization.	UCAIug – OpenSG, Smart Grid Enterprise (Chris Knudsen)	October, 2009	6 months for requirements with UCAIug, map models (ADR, SEP) against CIM. OpenSG has done a lot of this. SGEnterprise is the lead group within OpenSG for consistent usage of information across different domains. All documents are open and free, but there is a membership/participation fee. Participation fee is $200 individual, $5k corporate. High vendor/ utility participation ratio. October release is first complete draft of requirements. Requirements are close to complete and there is a document available for comment now. Issued under "Creative Commons License" (royalty free)
Reach out to ANSI C12, IEC (61850), ZigBee, and OASIS SDOs to get them formally involved in the existing UCAIug process as members of the "Tiger Team"	UCAIug – OpenSG, Smart Grid Enterprise	Immediate	Already have IEC, Zigbee, and some OASIS members that are part of the UCAIug. Need to get affirmative involvement of PAP target SDOs – OASIS, IEC 61850, IEC 61968, ANSI C12.19, ZigBee SEP 2
Have meeting in October with all the different stakeholders	NIST	October, 2009	NIST meeting to check on progress of this effort against PAP10.
Develop a statement of support for extending their process to incorporate inclusion of additional stakeholders into their existing process.	UCAIug – OpenSG, Smart Grid Enterprise	Immediate	

5

PAP 10: Objective 2 Tasks

Task	Responsible	Date	Notes
OBJECTIVE 2: Develop short term plans for near-term customer access to usage data based upon today's installed meters.	UCAIug	January, 2010	Work to be done such that at least minimal definitions are stable at this date.
Manage under same ground rules as Objective 1 tasks.	UCAIug		

6

PAP 10: Objective 3 Tasks

Task	Responsible	Date	Notes
OBJECTIVE 3: Develop composite information model that can be easily transformed without loss for transport via standards in OASIS, IEC61970/61968, IEC61850, ANSI C12.19/22, AHRAE 135, and ZigBee SEP 2	UCAIug - OpenSG	January, 2010	There is some homework that needs to be done. 61850 being looked at to be put in UML. Don't have the details of this right now. The extended CIM is being developed with the WSDLs by January.
Manage under same ground rules as Objective 1 tasks.	UCAIug		

7

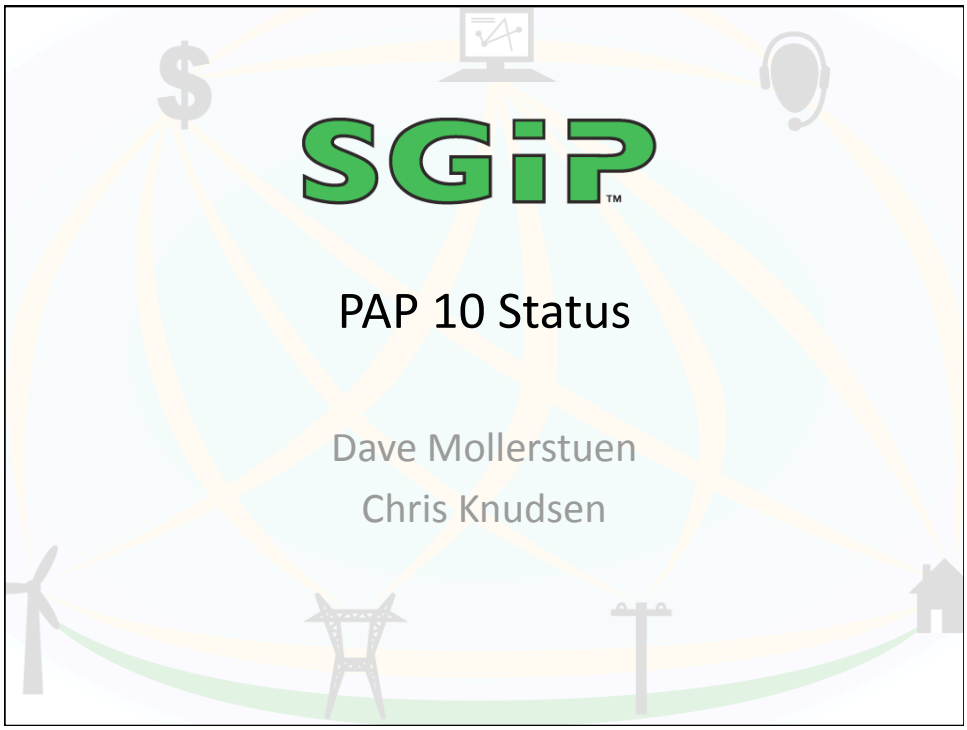
PAP 10: Objective 4 Tasks

Task	Responsible	Date	Notes
OBJECTIVE 4: Development and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies.	TBD		Need to wait on this until requirements are defined and it has been discussed within the PAP10 group.
For each SDO and the PAP stakeholders, UCAIug will provide a proposed plan for conveying the result of Objective 3 to the SDOs – CIM, 61850, OASIS, ANSI C12.19, ZigBee SEP 2	UCAIug	October, 2009	

8

Status Updates

- Overview
  - Chris Knudsen
- User and Business Requirements + Use Cases
  - Dave Mollerstuen
- System Requirements
  - Dave Mollerstuen
- Common Usage Information
  - Sharon Dinges
- Remaining tasks and status
  - Chris Knudsen and Dave Mollerstuen



Detailed Status – Overview

Dave Mollerstuen

- Chair of OpenADE Task Force
- PAP 10 Lead for UCAIug / Open Smart Grid
- Senior Product Manager, Tendril Networks
- Email: dmollerstuen@tendrilinc.com

- PAP 10 versus OpenADE
- Metering versus Billing
- Overview of each individual PAP 10 Objective …

Detailed Status – Objective 1

OBJECTIVE 1: Develop a summary of information needs for various means of customer information access about metering and billing.

- *Collect* existing requirements / use cases / data definitions (e.g. OpenADE, ZigBee SE, others)
- *Analyze* existing work
- Status:
  - Initial OpenADE metering data definition, I'll be sending that information to PAP 10 list this week
  - Cleared sharing of ZigBee SE elements w/ ZigBee Alliance, I'll be sending relevant metering items to PAP 10 list this week
  - Call to other stakeholders to publicize / share their relevant metering items, initially on the PAP 10 email list
  - Expect to start up weekly calls this month

Detailed Status – Objective 3

- **OBJECTIVE 3: Develop composite information model that can be easily transformed without loss for transport via standards in OASIS, IEC61970/61968, IEC61850, ANSI C12.19/22, AHRAE 135, and ZigBee SEP 2**
- *Derive* composite, canonical requirements / user cases / data definitions
- Status:
  - Pending additional contributions, analysis (Objective 1)

Detailed Status – Objective 4

OBJECTIVE 4: Development and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies.

- *Communicate* canonical definition to participating, broader SDO organizations
- *Harmonize* (*interoperate*) with legacy, existing, and future work
- Status:
  - Pending Objectives 1 and 3
  - Expect harmonization effort to be led by various participating SDO representatives within their own organization.

Detailed Status – Objective 2

OBJECTIVE 2: Develop short term plans for near-term customer access to usage data based upon today's installed meters.

Addressed by OpenADE 1.0.

OpenADE Overview

What

- Standardized Machine-to-Machine (M2M) interface that permits utilities to share, at the consumer's request and under the consumer's direction, a broad set of that consumer's utility data with specific 3rd Parties.

Who

- Consumers!
- Utilities (T&D, REPs)
- 3rd Parties (Residential Energy Management, Demand Response Aggregators, Distributed Generation, etc.)

Why

- Increased efficiencies, increased reliability, … (i.e. "Why SmartGrid?")
- Standardizes interface: reduces implementation costs, time to market

OpenADE Participants

OpenADE Participants (sampling)

Utilities	3rd Parties	Consumer	Government
Consumers Energy	Tendril Networks	Citizens Utility Board (State of Illinois)	NIST
Florida Power and Light	Google	UCAN	PUC Texas
Oncor	Greenbox	NIST	
Pacific Gas and Electric	Comverge		
Reliant	Juice Technologies		
Southern California Edison	E:SO		
San Diego Gas & Electric	Efficiency 2.0		
Dominion	CIMple Solutions		
Xtensible Solutions	IBM		
	Microsoft		
	Ecologic Analytics		
	IntellEnergyUtil (IEU)		
	Sensus		
	Sonoma Innovation		

OpenADE Scope

Scope of Initial Release

OpenADE 1.0 will be limited to the functions required for a Utility to provide a Consumer's consumption data to an authorized, specific 3rd Party. Availability of that data will be in accordance with industry best practices and / or jurisdictional requirements.

Scope of Subsequent Releases

Subsequent versions of OpenADE will include access to the following Consumer Utility Data elements:

- Pricing information
- Network events
- HAN and configuration information

OpenADE 1.0 User Requirements

- Document available at OpenADE SharePoint, SmartGridiPedia sites
- Version 1.0 approved by Open SG Technical Committee, but welcome additional comments (and are prepared to make changes to 1.0 document)

User Requirements Table of Contents

OpenADE Use Cases

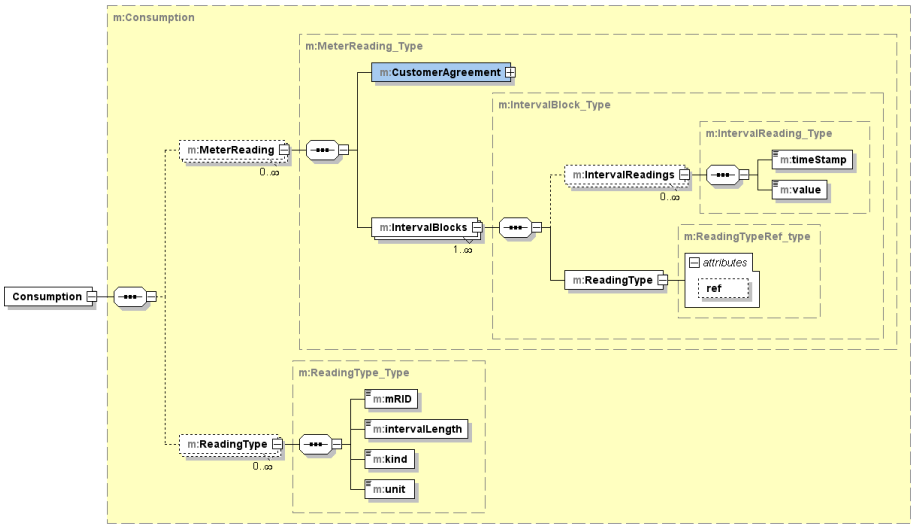
- Authorization – Consumer Grants Permission
- Authorization – Consumer Extends Permission
- Authorization – Consumer Terminate Permission
- Publication – Utility Provides Consumer Data to 3rd Party

OpenADE 1.0 System Requirements

- System Requirements Specification (SRS) initial drafts available at OpenADE SharePoint site
- Expect to complete version 1.0 of SRS in January 2010
- Includes data definitions (XSDs) and service definitions (WSDLs) for preliminary / "early adopter" implementation; allows early implementations, experience as requirements feed into formal standardization process (expect to have initial implementations by the middle of 2010)

SRS Table of Contents

OpenADE 1.0 Metering XSD (preliminary)



Remaining Tasks / Timeframes

- Objective 1, *collection* and *analysis*: January 2010
- Objective 3, *derivation*: March 2010
- Objective 4, *communicate*: April 2010
- Objective 4, *harmonization* / *interoperation*: ??

Energy Usage Information

Filling the Information Gap

Sharon E. Dinges
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Gap / Overlap

Toby's e-mail to multiple groups:
Some Thoughts on Energy Usage Information 20091112.doc

- *PAP10 grew out of the desire to communicate meter information to customer energy management systems; the title evolved to "Standard Energy Usage Information".*
- *The work on PAP10 has concentrated more on mechanisms for delivering information than on the nature of, and broad user requirements, for the usage information.*
- *A common interoperable model will enable equipment makers to build for any covered environment, and to increase the size of the market for usage-aware control systems and equipment, while allowing a focus on higher value technology.*

Background: PAP10 Objective 3

From the Twiki…
High level objective for PAP10, included in List of Tasks for the PAP:

- *OBJECTIVE 3: Develop composite information model that can be easily transformed without loss for transport via standards in OASIS, IEC61970/61968, IEC61850, ANSI C12.19/22, AHRAE 135, and ZigBee*
- *The energy transaction is the informational hand-off within and between adjacent domains in the Smart Grid, just as the meter is the hand-off within and between domains. Shared energy-transaction information is essential to interactions between:*
  - *Distribution and the industrial, commercial, and home premise;*
  - *The service provider and industrial, commercial, and home premises;*
  - *Distributed energy resources and all other domains; and*
  - *Plug-in electric vehicles.*

The Building / Facility

- The Building / Facility:
  - Systems and equipment that consume energy
  - Systems and equipment that produce, and/or store, energy
  - Electric Meter is on the building
    - Manage net energy use by building as a whole, not with each individual component.
- The building/facility managed like a microgrid?
  - "Building Microgrid" manages and balances the energy consumers and producers
  - "Transactions" are carried out within the building, separate from the utility grid, itself

Three typical scenarios within a building

1. Centrally-managed system of systems
   - Typical: BAS / EMS / FMS
   - Integration between subsystems: HVAC, lighting, generation, metering, etc.
2. Distributed, collaborative systems & equipment
   - Information exchanged between peers / nodes
   - May have one node act as the master
3. Hybrid: Centralized facility management & coordination of the collaborative peers

Standards Development Organizations

- ASHRAE SSPC135 – BACnet
  - Electric Meter Device Interface
    - Provides method for mapping to ANSI C12.19
    - Extensible for implementation flexibility
- ZigBee
  - Smart Energy Profile
- EIS Alliance
  - New group: Energy Usage Information
  - http://eisalliance.org/
- Other SDOs?

Moving Forward

- Develop a standard method of exchanging information
  - Identification of relevant use case scenarios
    - Includes enabling tasks:
    - Demand, Usage, Generation / Storage capacity, Pricing
  - Energy usage information
    - To, From, Between microgrids
    - This also means the building / facility

Moving Forward – Closing Thoughts

Some Thoughts on Energy Usage Information 20091112.doc

- *Different kinds of information—interval data, "burn rate", past usage information, present consumption—can improve the effectiveness of building automation and energy management systems.*
- *Issues include*
  (1) Is a common format feasible across a broad range of users and devices?
  (2) Is one format sufficient for differing requirements?
  (3) What are the differing requirements?

Energy Usage Information

Filling the Information Gap

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Discussion Points

- Cross connections
  - Target SDOs, other groups, PAP3, PAP9
- Improvements
- Adjustments Summary
- Next Steps